1. A frequency selective surface (FSS) comprising a periodically replicated unit cell,

the unit cell including a chemoresistive material having an electrical conductivity that changes in a presence of an analyte.

2. The FSS of claim 1, wherein the unit cell further comprises an arrangement of conducting patches on a dielectric substrate.

3. The FSS of claim 2, wherein at least two conducting patches are interconnected by the chemoresistive material.

4. The FSS of claim 1, wherein the unit cell comprises a pattern of chemoresistive material on a dielectric substrate.

5. The FSS of claim 1, wherein the unit cell includes at least one dielectric slot in a conducting medium, the chemoresistive material being adjacent to the dielectric slot.

6. The FSS of claim 1, wherein the chemoresistive material comprises a conducting polymer.

7. The FSS of claim 1, wherein the electrical conductivity of the conducting polymer decreases when the conducting polymer is exposed to the analyte.

8. The FSS of claim 1, wherein the chemoresistive material includes a semiconductor nanostructure.

9. The FSS of claim 1, wherein the chemoresistive material includes a metal nanostructure.

10. The FSS of claim 1, wherein the chemoresistive material includes a composite of a polymer and electrically conducting particles.

11. The FSS of claim 10, wherein the conducting particles are carbon-containing particles.

12. The FSS of claim 10, wherein the polymer swells on exposure to the analyte.

13. An artificial magnetic conductor comprising the FSS of claim 1, the FSS being supported by a surface of a thin dielectric substrate, the opposed surface of the dielectric layer supporting an electrical conductor.

14. An electromagnetic absorber including the FSS of claim 1.

15. An antenna including the FSS of claim 1.

16. An electromagnetic reflector including the FSS of claim 1.

17. A process for detecting an analyte, the process comprising:

providing an apparatus including a chemoresistive material, the chemoresistive material having an electrical conductivity that changes on exposure to the analyte;

determining an electromagnetic property of the apparatus, the electromagnetic property being correlated with the electrical conductivity of the chemoresistive material; and

detecting the analyte using the electromagnetic property.

18. The process of claim 17, wherein the electromagnetic property is a electromagnetic transmission, electromagnetic absorption, or electromagnetic reflection.

19. The process of claim 17, wherein the apparatus has a resonance frequency, and the electromagnetic property is determined at the resonance frequency.

20. The process of claim 17, wherein determining the electromagnetic property includes irradiating the apparatus with electromagnetic radiation from a remote source of electromagnetic radiation.

21. The process of claim 17, wherein the remote source of electromagnetic radiation includes a radar transmitter.

22. The process of claim 17, wherein the apparatus includes a frequency selective surface (FSS) comprising a periodically replicated unit cell, each unit cell including the chemoresistive material.

23. The process of claim 22, wherein the FSS has a resonance frequency, the electromagnetic property being detected at the resonance frequency.

24. The process of claim 17, wherein the apparatus is deployed into the atmosphere, and determining the electromagnetic property of the apparatus includes irradiating the apparatus with a radar beam and detecting reflected radar radiation.

25. A frequency selective surface (FSS), the FSS comprising a periodically replicated unit cell, the unit cell including a chemoresistive material having an electrical conductivity that changes in a presence of an analyte.

26. The FSS of claim 25, wherein the unit cell has a geometry chosen so as to provide an electromagnetic resonance at a resonance frequency.

27. The FSS of claim 25, wherein the unit cell comprises an electrically conducting patch and a region of chemoresistive material adjacent to the electrically conducting patch.

28. The FSS of claim 25, wherein the unit cell comprises a plurality of electrically conducting patches, and at least one region of chemoresistive material.

29. The FSS of claim 25, wherein the unit cell comprises a first chemoresistive material having a first electrical conductivity correlated with a presence of a first analyte, and a second chemoresistive material having an electrical conductivity correlated with a presence of a second analyte.

30. The FSS of claim 25, wherein the unit cell includes at least one dipole slot formed in a metal screen, and a region of chemoresistive material within the metal screen.

31. The FSS of claim 30, wherein the region of chemoresistive material is substantially adjacent to the at least one dipole slot.

32. An apparatus comprising a periodic structure,

the periodic structure including a pattern of chemoresistive material,

the apparatus having a first electromagnetic property in a presence of an analyte, and a second electromagnetic property in an absence of the analyte,

a difference between the first electromagnetic property and the second electromagnetic property at least in part arising from an electrical conductivity change of the chemoresistive material.

33. The apparatus of claim 32, wherein the periodic structure is a frequency selective surface supported on a surface of a dielectric layer.

34. The apparatus of 32, wherein the periodic structure further comprises a replicated pattern of metal patches.

35. The apparatus of claim 32, wherein the apparatus is an electromagnetic absorber, electromagnetic reflector, electromagnetic transmitter, or antenna.

36. An apparatus including a frequency selective surface (FSS),

the FSS comprising a pattern of conductive patches,

the conducting patches being selectively interconnectable by a matrix of independently addressable switches.

37. The apparatus of claim 36, wherein the switches are passive switches not in electrical communication with a voltage source.

38. The apparatus of claim 37, wherein the switches are responsive to an external condition, the switches having a first electrical conductivity in a presence of the external condition, and a second electrical conductivity in an absence of the external condition.

39. The apparatus of claim 37, wherein the external condition is a presence of an analyte, the switches having the first electrical conductivity in a presence of the analyte, and the second electrical conductivity in an absence of the analyte.

40. The apparatus of claim 37, wherein the external condition is incident electromagnetic radiation.

41. The apparatus of claim 36, comprising a plurality of switch types, each switch type responsive to a different external condition.

42. The apparatus of claim 41, wherein each switch type is responsive to a different analyte.

43. An apparatus substantially as described herein.

44. A process of detecting an external condition substantially as described herein.